A PAINT-SPRAY NOZZLE FOR MARKING TREES

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A PAINT SPRAY NOZZLE FOR MARKING TREES

by

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Introduction

Pressurized paint cans may be used for marking trees by adding a special nozzle to the spray cap, so that the paint can be applied in lines narrow enough to form legible numbers or letters.

These cans usually contain 12 fluid ounces of paint pressurized with dichlorodifluoromethane, a gas used as a refrigerant or propellant. The pressure forces the paint through a metal tube extending from near the bottom of the can to a spring valve at the top. When this valve is opened by depressing a small lever, the paint emerges as a fine spray.

Cans of this type are intended for painting flat surfaces and, for such purposes, a broad spray is suitable. The mark on a tree, however, should not be more than one-half inch wide. Therefore, a special nozzle, long enough to project over the side of the can, was designed so that the tip could be held close to the tree. In addition, the longer bore, which is very small in diameter, reduces the flow and prevents heavy paint deposits. Thus, the paint reaches the tree before the spray cone has become too wide to form legible identification marks.

Paint-spray Nozzle

Type of Can

A can with a removable spray cap and a spring valve that will retain the pressure in the can when the cap is unscrewed is best suited for this purpose. This type of cap is often held in place by 7/16-inch threads, 28 threads to the inch. Once the nozzle is attached to a cap from the removable type of can, the unit can be used on any pressurized can having the same size threads.

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[1] Maintained at Madison, Wis., in cooperation with the University of Wisconsin.

Construction of Nozzle

The nozzle is made of hexagonal brass bar stock, 1/4 inch across the flats and is approximately 2 inches long. As most small drills are short, it is difficult to drill an accurate bore of this length. For this reason, the nozzle was made in parts a, b, and c (fig. 1).

The bore of part a was drilled with a No. 60 drill. This part of the nozzle serves merely as a tube to conduct the paint to part b. The bore should be kept small, however, because a larger bore would hold enough paint and Freon to force paint from the tip of the nozzle after the valve lever is released.

Parts b and c were drilled with a No. 80 drill. Even with parts as short as these, it was necessary to rotate the part in an accurate lathe and drill halfway from each end with a drill held in a chuck mounted in the tailstock.

After the bores were drilled, the ends were beveled out slightly with a larger drill to facilitate the insertion of a small wire for cleaning.

Parts a and b were fitted with both male and female machine-screw threads, size 6-32. Part c was threaded with male threads so that it could be screwed into either part a or part b. Thus, parts a and c, or parts b and c, can be used alone.

For appearance, the end of part c -- actually the tip of the nozzle -- was tapered to a conical shape. The hexagonal corners of parts a and b were rounded off to a 1/4-inch diameter near the male threads to provide clearance between the nozzle and the spray cap.

The small hole in the spray cap was drilled out and tapped with 6-32 machine-screw threads, so that the male end of parts a or b could be attached (d, fig. 1). The surface was end-milled to fit flat against the nozzle washer.

Fiber washers were used as gaskets to prevent paint leakage at the joints. These washers were about 1/32 inch thick and 1/4 inch in diameter. They fit snugly over the 6-32 threads. Three such washers are needed for each nozzle.

Washers of suitable size may be obtained at radio or electrical supply houses. They can be made by drilling a 1/4-inch fiber rod with a No. 28 drill and slicing off washers of the correct thickness with a narrow parting tool.

Assembly of Nozzle

Nozzle parts a, b, and c are screwed together with a washer in each joint. The nozzle is then screwed into the tapped-out spray cap. The third washer is used to seal this joint.

A pair of small, open-end wrenches should be used to tighten or loosen the various parts, but they should be used with discretion because it is easy to strip the threads of the brass parts or of the spray cap. The use of wrenches not over 1 or 1-1/2 inches long may reduce the danger of applying too much torque.

Use and Care of the Nozzle

Using the Nozzle

The can should be held with the nozzle tip close to the tree if a narrow line is desired. When the valve is open, the can should be moved fairly rapidly while the marking is being formed, otherwise the paint may be deposited so thickly that it will run. Care should be taken not to touch the tree, or the nozzle or spray cap may be damaged.

Cleaning and Storage

A piece of wire, 0.013 inch in diameter or smaller, is useful to clean the nozzle if it becomes clogged. Wire this small is not very common, but it can be obtained. Steel spring wire or piano wire with a diameter of approximately 0.0095 inch is used at the Laboratory.

When spraying is discontinued for a few hours or longer, it is advisable to run the wire through the nozzle and leave it there. This keeps the channel open for future use. It is recommended that the end of the wire be twisted into a loop and a string or tag tied to it to avoid losing it.

Turpentine or other paint thinners or solvents may be used freely to clean the nozzle parts. Turpentine or paint thinner may also be used to clean the spray cap, but other solvents, such as benzene or acetone may soften or destroy the flexible rubber or neoprene diaphragm in the cap.

The cans should be stored in an inverted position, so that any pigment that settles will not clog the open end of the internal metal tube.

Immediately before use the can should be turned over to its normal position and shaken vigorously until the metal agitators usually found in such cans rattle freely.

Figure 1.--Special tree-marking nozzle for pressurized paint cans. A, can with nozzle in place. B, parts of nozzle shown in finished and longitudinal section views, are made of hexagonal brass bar stock. Part a was drilled with a No. 60 drill; parts b and c with a No. 80 drill. The hole in spray cap d was drilled and tapped out with a 6-32 machine-screw thread. Threads of a, b, and c are also 6-32. Washers of hard fiber, about 1/32 inch thick and 1/4 inch in diameter and drilled with a No. 28 drill, are inserted between the three nozzle parts and between the nozzle and can.

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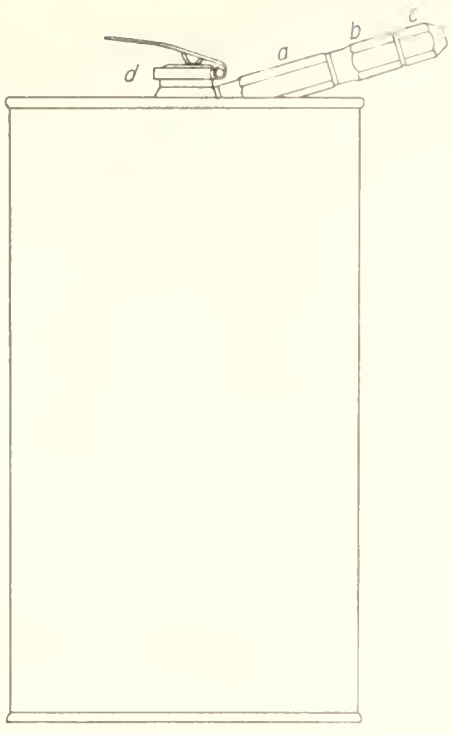
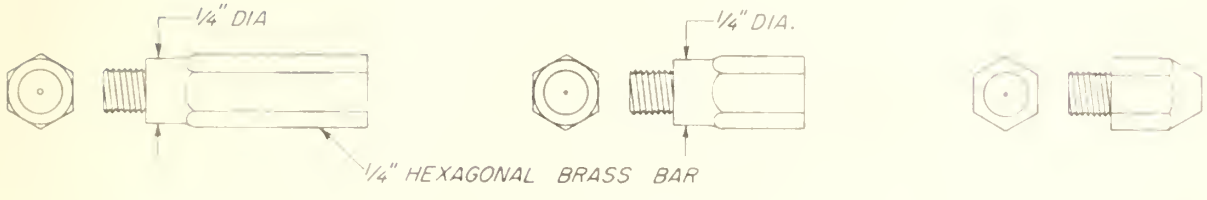
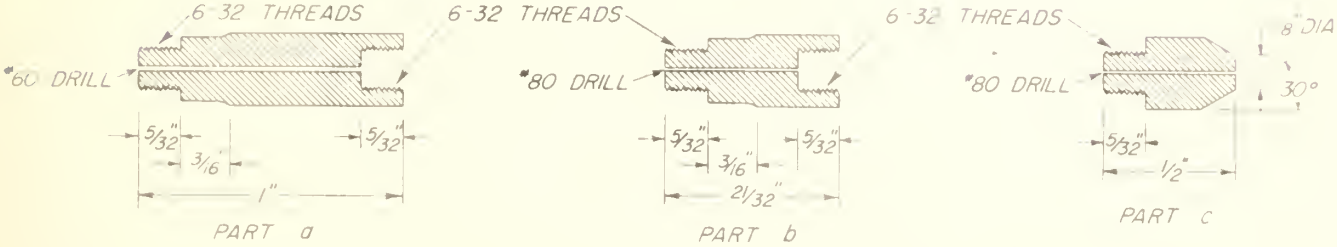

d
a
b
c

A


1/4" DIA
1/4" DIA.
1/4" HEXAGONAL BRASS BAR


6-32 THREADS
#60 DRILL
5/32"
3/16"
5/32"
1"
PART a
6-32 THREADS
#80 DRILL
5/32"
3/16"
5/32"
2 1/32"
PART b
6-32 THREADS
#80 DRILL
8" DIA
30°
5/32"
1/2"
PART c

B

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